Earth Science – Unit 1

Chapter 1 – The World of Earth Science

Biblical Worldview Essential Questions:
What is dominion science and why is it important?
Does your worldview affect how you interpret scientific discoveries?

Time: 1 week
Curriculum Objectives: 8.1, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain why Christians do science • Explain how earth science helps Christians declare God's glory • Defend the idea that earth science can play a role in God's work of redemption • Define worldview • Explain how one's worldview is a key part of doing science • Compare and contrast the secular and Christian worldviews • Explain how models are important to science • Define science • Explain how scientists do science • Compare and contrast operational and historical science • Identify different earth scientists and briefly describe their work	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 2 – Matter, Forces, and Energy

Biblical Worldview Essential Questions:

How can the study of matter point to God's creation design?

How does the law of conservation of mass/energy confirm the creation account?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Show the impact of worldview on science • Describe matter and the different forms it can take • Describe how matter changes from one state to another • Demonstrate three ways to measure matter • Classify forces and identify the various kinds of forces • Investigate and describe how forces work in the universe • Discuss the significance of the force of gravity • Define work and energy • Classify different types of energy • Discuss the significance of the principle of the conservation of energy • Describe the structure of atoms • Recognize that protons determine an element's identity • Compare and contrast ions and atoms • Tell the difference between elements and compounds • Show how a chemical formula is used to identify the elements in a molecule • Describe the structure of matter at the atomic level • State ways that we can know that different changes of matter have taken place	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 3 – Maps and Mapping

Biblical Worldview Essential Questions:

How can understanding how to read maps help in the mission field?

Why is it still necessary to read/make paper maps when we have technology?

Are you where you planned in the "map" of your Christian life?

Time: 2.5 weeks

Curriculum Objectives: 8.1, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Show why maps are important for life • Explain how mapmaking is modeling • Discuss why maps need coordinate systems • Describe how to find your location on a map • Summarize standard map features • Identify the three main types of map projections • Briefly discuss the properties and uses of the common map projections • Identify three standard types of maps • Briefly discuss the use of contour lines in topographic maps • Discuss the concept of a map theme • Identify thematic maps • Define a geographic information system (GIS) • State the main uses for a GIS • Identify sources of GIS data • Explain how GIS maps are used to help people	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Geocaching Activity • Trilateration Activity	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Earth Science – Unit 2

Chapter 4 – Geology: The Earth Speaks

Biblical Worldview Essential Questions:

How do scriptures support the young age of the earth?

What evidences are there in science that support the scriptures for the young age of the earth?

Time: 2 weeks

Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain why Earth is well-suited for life • Show how Earth is unique by comparing it to other planets • Explain how Earth's design helps human explore the heavens • Summarize the history of geology • Explain the dangers of viewing the history of the earth as very old and as the product of natural processes • Describe how geology is used • Explain how scientists study the interior of the earth • Describe the different layers of the earth and their properties • Sketch the earth's interior, labeling its regions and layers • Identify natural resources • Explain how to manage natural resources • List factors that affect environmental quality • Explain why Christians should be concerned about the environment • Analyze the relationship between Earth's resources and population	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 5 – The Changing Earth

Biblical Worldview Essential Questions:
Same as chapter 4, chapters tie together.

Time: 2 weeks
Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain why creating a history of the world depends on one's assumptions about the beginning of the world • Compare and contrast the processes and sequence of the origin of the earth from the old-earth and young-earth viewpoints • Evaluate the scientific problems with the old-earth origins theory of the earth • Provide examples of geologists observations today that show that the earth has changed in the past and is changing today • Compare and contrast the old-earth and young-earth histories, emphasizing when changes happened and how long they took to occur • Evaluate the scientific problems with the old-earth view of the earth's history • Compare and contrast the arrangement and significance of the old-earth and young-earth geologic columns • Compare and contrast the secular and creationary theories of plate tectonics • Relate the significance of plate tectonics to the overall study of geology • Evaluate the two major views of plate tectonics and propose possible solutions to the problems in each view	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Creation Museum Video	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 6 – Earthquakes

Biblical Worldview Essential Question:
How do seismologists practice dominion science?

Time: 2.5 weeks
Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Summarize how tectonic force trigger earthquakes • Show how certain kinds of tectonic processes are most likely the cause of earthquakes • Identify the material properties of rocks that help cause earthquakes • Explain how joints, faults, and earthquakes are related • Summarize how an earthquake happens • Describe how seismologist collect earth wave data • Compare and contrast the types of seismic waves • Explain how to find an earthquake's epicenter • Describe how scientist rate earthquakes • Explain why earthquakes can be so dangerous • Evaluate the difficulty and benefits of predicting earthquakes	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Towering Toothpick Earthquake Project	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 7 – Mountains and Hills

Biblical Worldview Essential Questions:

What do the different types of landforms tell us about the consequences of the Fall?

Can there still be beauty in creation even though it has changed due to the Fall/Flood?

Time: 1 week

Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Discuss the relation of topography to the principle of isostasy • Summarize processes that contribute to orogeny • Identify and describe various kinds of mountain and hill landforms • Differentiate between elevation and actual height • Relate tectonic forces to orogeny • Identify various convergent, divergent, and volcanic mountain landforms • Identify various uplift and subsidence landforms • Explain in basic terms the processes of erosion and deposition • Describe the various processes that produce erosional mountains • Describe related tectonic processes that contribute to some residual landforms • Discuss the major processes that created depositional mountains	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 8 – Volcanoes and Volcanism

Biblical Worldview Essential Questions:

How do volcanologists practice dominion science?

What "good" things can still come from the consequences of the Fall?

Time: 2 weeks

Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain how earth science helps reduce the risks of natural hazards like volcanoes • Describe the structure of a volcano • List and describe the main kinds of volcanic emissions • Associate the locations of extrusive igneous features around the world with tectonically active regions • Infer from the global distributions of volcanoes the amount of volcano activity during the Genesis Flood • Identify and categorize volcanoes by their shape and composition • Infer the activity of a volcano based on its eruption history and seismic activity • Analyze the definition of volcanic activity from both young-earth and old-earth viewpoints • Classify the destructiveness of a volcanic eruption based on the Volcano Explosivity Index • Compare intrusive volcanism with extrusive volcanism • Describe various intrusive igneous formations and how they formed • Define the geothermal gradient and describe how it varies with depth into the earth • Discuss hydrothermal processes and identify volcanic features associated with heated groundwater • Describe how energy can be extracted from geothermal sources	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Virtual Volcano Worksheet	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Earth Science – Unit 3

Chapter 9 – Minerals and Ores

Biblical Worldview Essential Question:
How can we be wise stewards of our resources?
How can mineral/rock classification be used to explain the intricacies of God?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Relate the study and use of minerals to exercising biblical dominion • Determine if a substance is a mineral • Classify natural materials as either native or compound minerals, or mixtures of these • Define mineralogy and explain what mineralogists do • Describe various tests to identify certain common minerals • Evaluate the dominion uses of minerals in view of their practicality and beauty • Discuss where native minerals are found • Describe the key identifying properties of native minerals • Give specific examples of the usefulness of minerals • Differentiate between native and compound minerals • Weigh the benefits and adverse effect of mining for minerals	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Online Mineral Worksheet • Mighty Mineral Project	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 10 – Rocks

Biblical Worldview Essential Questions:
Same as chapter 9, chapters tie together.

Time: 2 weeks
Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Define rocks • Classify types of rocks on the basis of how they formed • Identify properties of rocks used to classify them • Evaluate the theories of origin of igneous rocks • Classify igneous rocks by texture and magma types • Identify common intrusive and extrusive igneous rocks • Explain why igneous rocks have been used by humans through history • Evaluate the theories of origin of sedimentary rocks • Describe the processes by which clastic and nonclastic sedimentary rocks formed • Correctly classify sedimentary rocks • Discuss common uses of sedimentary rocks • Differentiate between metamorphic rocks and other kinds of source rocks • Identify the important agents of metamorphism • Describe important processes of metamorphism • Correctly classify metamorphic rocks • Explain why metamorphic rocks have been used throughout history • Explain the key features of the old-earth rock cycle hypothesis • Evaluate the feasibility of the rock cycle from within a young-earth view of Earth's history • Refute the assertion that the earth was created to reused rock natural resources	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Who am I? Rock Game • Online Rock Worksheet	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 11 – Fossils

Biblical Worldview Essential Questions:
Can the fossil record be used to support a worldwide Flood?
Can the fossil record be used to refute evolution?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain what fossil are and how they form • Evaluate whether an object is a fossil, a trace fossil, or a non-fossil • Analyze the origins of fossils we find today • Summarize how to classify and name living and extinct organism • Identify the factors that lead to the extinction of an organism • Evaluate efforts to interpret the fossil record in light of one's worldview • Analyze and evaluate the explanations for the evidence of mass extinctions in the fossil record • Describe fossil fuels and how we use them • Evaluate different origin theories for coal, petroleum, and natural gas • Evaluate the risks and benefits of using fossil fuels	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Online Fossil Lab • Mold & Cast Fossil Activity • Trilobites Fossil	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 12 – Weathering, Erosion, and Soils

Biblical Worldview Essential Question:
How can you better prepare for the "weathering" and "erosion" in your life?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.4, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain how rock weathers • Recognize the effects of weathering • Analyze what determines the rate of weathering • Relate stream erosion and deposition to stream speed • Explain the process of wind erosion and deposition • Describe the main processes that result in glacial erosion and deposition • Recognize the effects of erosion • Identify erosion and depositional features on maps • Describe how soil forms, including its horizons • Analyze how different factors affect soil • Evaluate ways for using and conserving soil	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Earth Science – Unit 6

Chapter 25 – Space Exploration

Biblical Worldview Essential Questions:

Are we being wise stewards of our resources by exploring space?

What does the universe tell us about God's power and the importance of beauty?

Time: 2 weeks

Curriculum Objectives: 8.1, 8.2, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Evaluate the importance of space exploration • Classify telescopes by their structure • Explain the function and limitations of various kinds of telescopes • Explain how a rocket works • Identify the challenges of exploring the solar system • Contrast satellites, probes, and landers • Explain how satellites, probes, and landers are used • Summarize the challenges of sending humans into space • Summarize the history of manned space exploration • Evaluate the risks and benefits of manned space exploration	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Vinegar & Baking Soda Rocket Project	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Earth Science – Unit 5

Chapter 18 – Earth's Atmosphere

Biblical Worldview Essential Questions:
How does Earth's atmosphere show that God cares for us?
What type of "atmosphere" is beneficial to believers?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.3, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Describe how people can affect the atmosphere • Identify evidence of design in the atmosphere • Sketch the atmosphere's composition, temperature, and structure • Trace the flow of carbon and nitrogen in the atmosphere • Relate special zones of the atmosphere to the other layers • Explain how special zones in the atmosphere are evidence of God's good design • Sketch the flow of energy in the atmosphere • Compare radiation, conduction, and convection	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 19 – Weather

Biblical Worldview Essential Questions:
Should Christians expect "storms" in their lives?
What type of "preparations" can Christians make for the storms in their life?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.3, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Evaluate the risks and benefits of wind power • Describe the weather data that meteorologists collect • Compare and contrast the different aspects of weather to one another • Explain what factors affect winds • Locate and name the major global wind belts • Identify sources of local winds • Explain how clouds form • Relate clouds, air temperature, and humidity to precipitation • Compare and contrast the different forms of precipitation	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 20 – Storms and Weather

Biblical Worldview Essential Questions:
Same as chapter 19, chapters tie together.

Time: 2 weeks
Curriculum Objectives: 8.1, 8.3, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Explain how air masses move with weather • Identify air masses by their source regions • Connect weather to the interaction of two or more air masses • Describe processes that produce precipitation • Classify storms and explain how they form • Describe the major hazards of each kind of storm • Identify the key actions to take to remain safe in each kind of storm • Describe weather station models • Explain how weather data is used to construct weather maps • Evaluate the probable accuracy of a weather forecast	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities • Weather Project	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test

Chapter 21 – Climate and Climate Change

Biblical Worldview Essential Question:
Should Christians be concerned about climate change and global warming?

Time: 2 weeks
Curriculum Objectives: 8.1, 8.3, 8.6

Objectives	Methods	Resources	Assessment
The student will: • Evaluate both a lack of conservation and extreme environmentalism from a Christian worldview • Contrast climate with weather • Analyze how different factors may affect climate • Identify six major kinds of climates • Give examples of the different kinds of climates • Analyze potential causes for climate change • Critique worldview assumptions behind global climate models • Evaluate current fears of climate change • Formulate a Christian perspective of climate change	• PowerPoint/Mimio presentations • Illustrate problems on the white board • Do textbook exercises in class • Labs & Group Activities	• Textbook: Bob Jones Earth Science 4th Edition • Lab Manual: Bob Jones Earth Science 4th Edition • Quizlet • Online Websites	• Quizlet Logs • Quizzes • Completion of homework • Participation in class activities • Answering questions in class work • Lab Activities • Website Activities • Chapter test